

**Example #10:** A motor driven sled of mass 10.0 kg moves at a constant speed of 15 m/s over a horizontal surface of coefficient of friction  $\mu = 0.12$ . What power would the motor have to develop to cause this to happen?

$$P = \frac{W}{t} = \frac{F_f d}{t} = F_f v_{av}$$

$$\rightarrow F_f = \mu F_N = \mu F_g \quad (\text{horizontal surface})$$

$$\text{so } P = \mu F_g v_{av} = .12(10)(9.8)(15)$$

$$P = 1.8 \times 10^2 \text{ W}$$